

Valves for the Energy Industry

www.pbmvalve.com



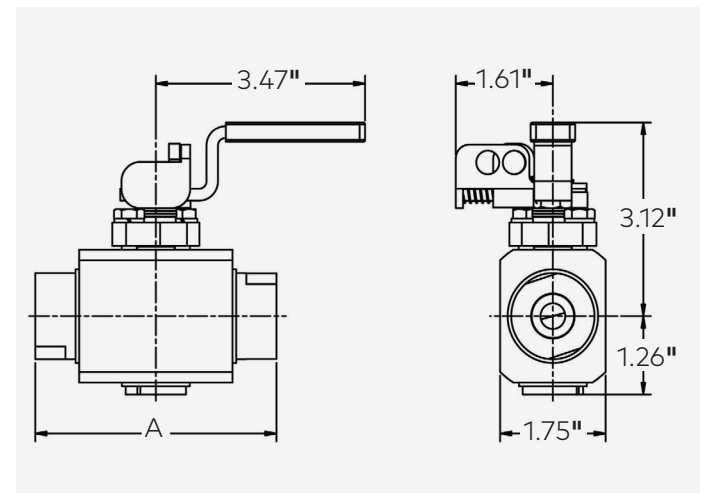
- Double Block and Bleed
- Flush and Bleed Rings
- Instrument and Transmitter Isolation Valves
- Low-Emission Packing Design
- Process Flow
- Sampling

2-Way Welded Instrument Valves

Instrument Isolation and Process Flow

PBM's Instrument Valves are used for process flow or isolation of pressure gauge, orifice plates, flush rings and various measurement instruments. Valves are designed to ASME B16.34. They offer a higher performance solution to needle valves.

PBM Double Block and Bleed Valves are custom engineered from standard components in a variety of alloys and pressure classifications to meet customer specifications. All PBM double block and bleed valves are made in the USA and have full supporting material and testing documentation available. PBM valves are trusted by major oil refineries where safety and reliability are critical. Valves are also designed to ASME B16.34.



Sizes

1/4" to 2" with available bore sizes of .41", .50", and .75"

Pressure Class

Up to ANSI Class 2500 (Class 1500 standard)

End Connections

- Extended Male or Female NPT
- Male or Female NPT
- Flanged
- Buttweld (tube or pipe)
- Ext. Socket Weld
- Compression
- Instrument Adapter Flange
- Others Available

Features

- Quarter Turn Operation
- Optional Extended Handle with lock out
- Bleed or Gauge Ports Available
- Soft and Metal Seated Designs
- Welded body
- Rodable in 1/4" - 2"
- API-622 Low-E Stem Packing Standard
- SIL-3 Capable per IEC 61508
- API-607 Fire Rated
- Certified to API-641
- Can comply with API-6D if specified

Materials

- Stainless Steel
- Duplex Stainless Steel
- Carbon Steels
- Monel®
- Hastelloys®
- Others Available

Seating

- V-TEF™ Seats: 350°F (176°C)
- S-TEF® Seats: 400°F (204°C)
- PEEK® Seats: 500°F (260°C)
- C-TEF™ Seats: 600°F (315°C)
- Stellite® Ball & Seats: 800°F (427°C)
- Tungsten or Chrome Carbide Coated S/S Ball & Seats: 800°F (427°C)

Packing

- Die Molded Graphite (High Temp.)
- C-TEF™, V-TEF™ or S-TEF®
- API-622 Low-E Stem Packing Standard

Testing and Documentation

- MTR (Material Test Reports)
- PMI (Positive Material Identification)
- LP (Liquid Penetrant)
- Radiographic Examination
- Pressure Testing per API 598
- Magnetic Particle Examination
- Ultrasonic Examination

2-Way Valve with .41 dia. Port End Fitting	A in.	A mm
Ext. Male NPT	6.50	165
Male NPT	4.75	121
Female NPT	4.00	102
Ext. Female Socket Weld	6.50	165
Buttweld for Sch. 40 Pipe	6.50	165
Buttweld for Tube	6.50	165

Notes:

Dimensions shown for Class 1500 1/2" valves only. Design is rodable with rod out tool.



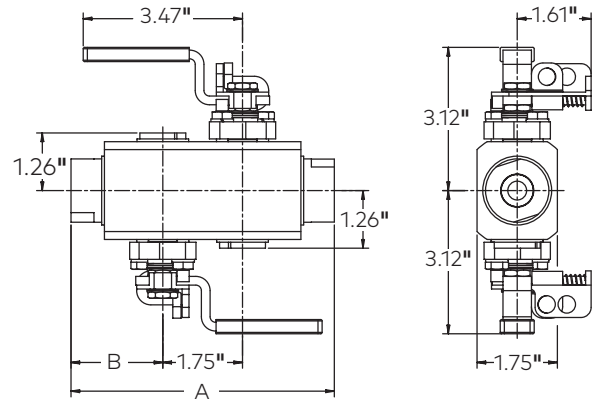
Welded Double Block & Bleed Valves Instrument Isolation & Process Flow

PBM double block and bleed valves provide true double positive isolation:

- Two independent sealing members (two ball and seat combinations)
- Two separate actuating mechanisms (two stems and handles or actuators)

This configuration provides the best technology for the most severe isolation services where double block and bleed is required.

Double Positive Isolation when safety is critical.



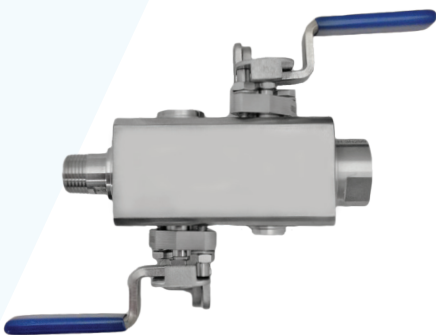
True DPI in 5 configurable body styles:

- Smaller than traditional 2 valve designs
- Lower potential emissions due to less flange connections
- 1/2" - 12"
- Full or standard (reduced) port
- Fire rated to API 607
- API-622/641 low emissions standard
- Various bleed or purge options available
- Extended handles available
- 1/4 turn ball valve enables easy open/close and visual indication of valve position

DBB VALVE .41 dia. port end fitting

	A in.	A mm	B in.	B mm
Extended Male NPT	8.25	210	3.25	83
Male NPT	6.50	165	2.37	60
Female NPT	5.75	146	2.00	51
Ext. Female Socket Weld	8.25	210	3.25	83
Buttweld for Sch. 40 Pipe	8.25	210	3.25	83
Buttweld for Tube	8.25	210	3.25	83

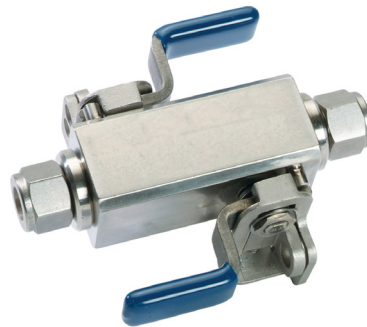
Notes: Dimensions shown for 1/2" valves only. Design is rodable with rod out tool.



IMI PBM DBB/DPI IM (Instrument Valve)

with locking lever handles and ends and API 622 Low-E packing

- Temp: <800°F (427°C)
- Pressure: CL 2500
- Sizes: 1/2" - 1 inch
- Ends: Any



IMI PBM Standard/DPI IM (Instrument Valve)

with locking lever handles

- Temp: <800°F (427°C)
- Pressure: 2000 WOG
- Sizes: 1/4" - 1"
- Ends: Any

Bolted Instrument Valves

PBM's bolted Instrument Valve design allows end connection design and fabrication flexibility. It is available in a wide range of materials for a variety of temperature and pressure classes to meet your most stringent process applications.

Features

- Full and Reduced Port Designs
- Customizable End Connections
- Quarter Turn Operation
- Bleed or Gauge Ports Available
- Bolted Body
- API-607 Fire Rated
- Braided Graphite Packing
- API-641 Low-E, Standard
- Gear Operator recommended for 1-1/2" and above

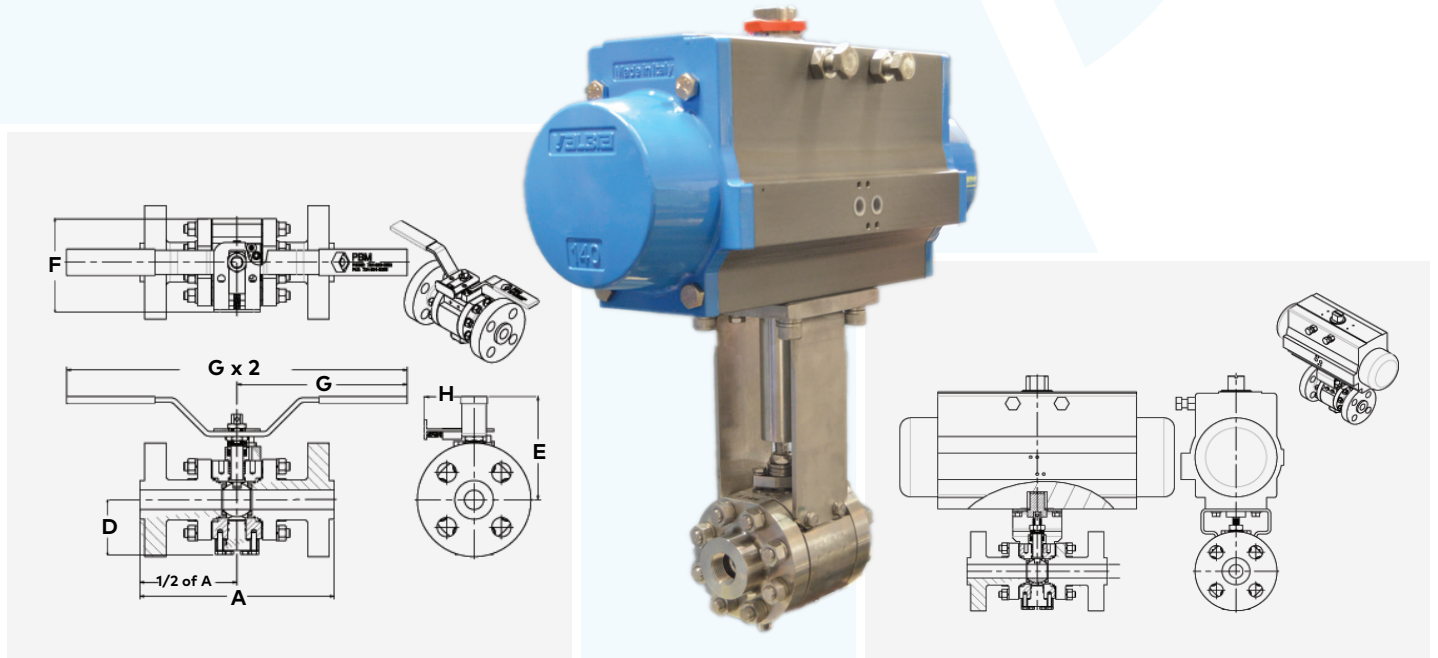
Sizes

1/2" - 2" CL600, CL900 and CL1500

Seating

- V-TEF™ Seats: 350°F (176°C)
- S-TEF® Seats: 400°F (204°C)
- PEEK® Seats: 500°F (260°C)
- C-TEF™ Seats: 600°F (315°C)
- Stellite® Ball & Seats: 800°F (427°C)
- Tungsten or Chrome Carbide Coated S/S Ball & Seats: 800°F (427°C)

Size	Ends	Units	A	D	E	F	G	H
			Overall length	℄ to bottom of valve (2-way)	Distance to top of valve	Body width without ends	Handle radius	℄ to locking mechanism
			CL600 / CL1500	CL600 / CL1500	CL600 / CL1500	CL600 / CL1500	CL600 / CL1500	CL600 / CL1500
1/2" DN 15	Flanged	in (mm)	6.50 (165) / 8.50 (216)					
	Female NPT	in (mm)	4.75 (121)	1.72 (44)	3.02 (77)	2.40 (61)	3.47 (88)	1.61 (41)
	Others	in (mm)	8.50 (216)					
3/4" DN 20	Flanged	in (mm)	7.50 (191) / 9.00 (229)					
	Female NPT	in (mm)	5.50 (140)	2.33 (59)	4.06 (103)	3.75 (95)	10.09 (256)	2.08 (53)
	Others	in (mm)	9.06 (230)					
1" DN 25	Flanged	in (mm)	8.50 (216) / 10.00 (254)					
	Female NPT	in (mm)	6.00 (152)	2.92 (74)	4.81 (122)	4.5 (114)	14.06 (357)	2.57 (65)
	Others	in (mm)	10.06 (256)					
1-1/2" DN 40	Flanged	in (mm)	9.51 (242) / 12.01 (305)					
	Female NPT	in (mm)	6.50 (165) / 7.50 (191)	2.82 (72) / 4.17 (106)	5.76 (146) / 7.18 (182)	5.50 (140) / 7.5 (191)	18.06 (459) / 24.06 (611)	3.45 (88)
	Others	in (mm)	12.31 (313)					
2" DN 50	Flanged	in (mm)	11.50 (292) / 14.50 (368)					
	Female NPT	in (mm)	8.00 (203) / 10.00 (254)	3.42 (87) / 4.82 (122)	6.25 (159) / 7.43 (189)	6.25 (159) / 8.00 (203)	18.06 (459) / 24.06 (611)	3.45 (88)
	Others	in (mm)	13.31 (338)					

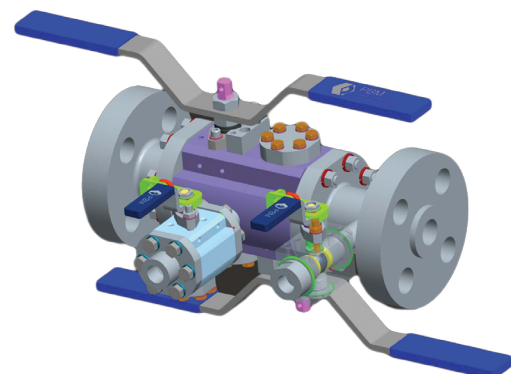
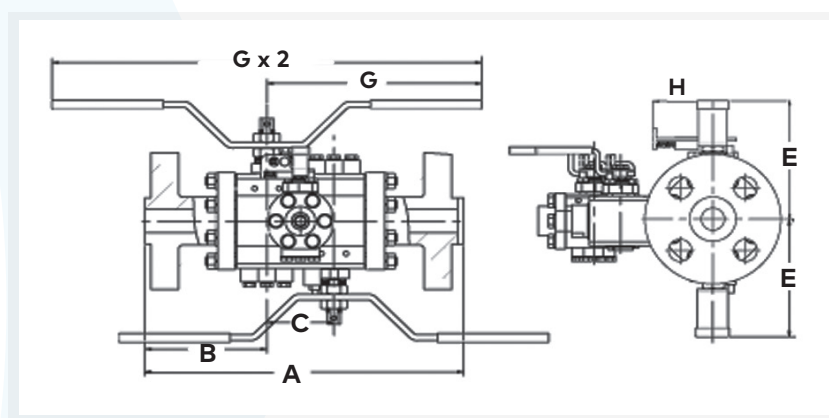
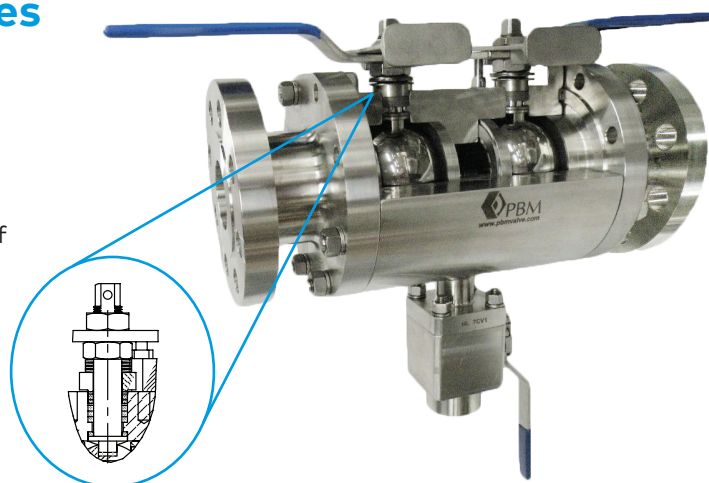


Bolted Double Block & Bleed Valves

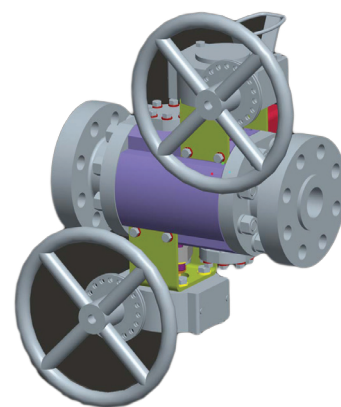
PBM valves with Low-E packing offer solutions to emission reduction.

Design features:

- Average stem packing leakage ≤ 10 ppmv for the duration of the test (100 ppm allowable)
- API 607 fire tested
- The high temperature valve version utilizes carbide-coated ball and seats
- Temp: $< 800^{\circ}\text{F}$ (427°C)
- Pressure: CL 1500
- Sizes: 3", 4" (CL600 only)
- Ends: Any



Size	Ends	Units	A	B	C	E	F	G	H
			Overall Length	CL to End	Ball Separation	Distance to Top of Valve	Body Width without Ends	Handle Radius	CL to Locking Mechanism
1/2" DN 15	Flanged	in (mm)	8.25 (210) / 10.25 (260)	3.25 (83) / 4.25 (108)					
	Female NPT	in (mm)	6.50 (165)	2.375 (60)	1.75 (44)	3.02 (77)	2.40 (61)	3.47 (88)	1.61 (41)
	Others	in (mm)	10.25 (260)	4.25 (108)					
3/4" DN 20	Flanged	in (mm)	10.00 (254) / 11.50 (292)	3.75 (95) / 4.50 (114)					
	Female NPT	in (mm)	8.00 (203)	2.75 (70)	2.50 (64)	4.06 (103)	3.75 (95)	10.09 (256)	2.08 (53)
	Others	in (mm)	11.56 (293)	4.53 (115)					
1" DN 25	Flanged	in (mm)	11.00 (279) / 12.50 (318)	4.25 (108) / 5.00 (127)					
	Female NPT	in (mm)	8.50 (216)	3.00 (76)	2.50 (64)	4.81 (122)	4.50 (114)	14.06 (357)	2.57 (65)
	Others	in (mm)	12.56 (319)	5.03 (128)					
1-1/2" DN 40	Flanged	in (mm)	13.01 (330) / 15.76 (400)	4.75 (121) / 6.00 (152)					
	Female NPT	in (mm)	10.00 (254) / 11.25 (286)	3.25 (83) / 3.75 (95)	3.50 (89) / 3.75 (95)	5.76 (146) / 7.18 (182)	6.00 (152) / 7.50 (191)	18.06 (459) / 24.06 (611)	3.45 (88)
	Others	in (mm)	15.81 (402)	6.16 (156)					
2" DN 50	Flanged	in (mm)	15.25 (387) / 18.75 (476)	5.75 (146) / 7.25 (184)					
	Female NPT	in (mm)	11.75 (298) / 14.25 (362)	4.00 (102) / 5.00 (127)	3.75 (95) / 4.25 (108)	6.25 (159) / 7.43 (189)	6.75 (171) / 8.00 (203)	18.06 (459) / 24.06 (611)	3.45 (88)
	Others	in (mm)	17.06 (433) / 17.56 (446)	6.67 (169)					



Ordering IM or IB Valves

How to order IM or IB valves (Other options are available on request):

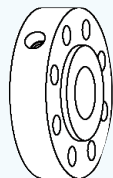
POS 1&2	POS 3&4	POS 5	POS 6	POS 7	POS 8	POS 9
	MATERIAL	VALVE TYPE	SERIES	1ST END CONNECTION TYPE (HP / UPSTREAM)	2ND END CONNECTION TYPE (LP / DOWNSTREAM)	SEAT / SEAL PACKINGS / O-RINGS (GRAPHITE STEM PACKING FOR ALL)
IM	H- = 316 S/S Body & End Conn. (800° F Max.)	A = 2-Way 150# Class	5 = No Fire-Safe	B = Ext. Butt weld Sch. 40	B = Ext. Butt weld Sch. 40	G = V-TEF™ / Graphite / FKM or V-TEF™ / V-TEF™ / FKM
IB	HH = 316H S/S Body & End Conn. (Over 800° F)	B = 2-Way 300# Class	6 = Fire-Safe API 607	D = Ext. Butt weld Sch. 10	D = Ext. Butt weld Sch. 10	H = S-TEF® / Graphite / FKM or S-TEF® / S-TEF® / FKM
AN	E7 = A-105 Carbon Steel Body & End Conn.	C = 2-Way 600# Class		F = Ext. Butt weld for Tube	F = Ext. Butt weld for Tube	N = PEEK / Graphite / Kalrez or PEEK / PEEK / Kalrez
SP	C- = Hastelloy C-276 Body & End Connections	D = 2-Way 900# Class		G = Eye Flange	G = Eye Flange	Q = Carbon Graphite / Graphite - 750° F
SD	C1 = Hastelloy B-2 Body & End Connections	E = 2-Way 1500# Class		L = RF Flange	L = RF Flange	S = Stellite Seats / Graphite Seals - 800° F Max
SI	Y- = Hastelloy C-22 Body & End Connections	F = 2-Way 2500# Class		O = Extended Male NPT	O = Extended Male NPT	T = Tungsten Carb. Ctd S/S Ball & Seats / Graphite Seals - 800° F Max
CS	M- = Monel Body & End Connections	K = Double Block 150# Class		P = Male NPT	P = Male NPT	U = Chrome Carb. Ctd. S/S Ball & Seats / Graphite Seals - 800° F Max
	P- = AL6XN Body & End Connections	L = Double Block 300# Class		Q = Female NPT	Q = Female NPT	I = S-TEF® / S-TEF® / FKM - VTFE Cavity Filler
	22 = Duplex 2205 Body & End Connections	M = Double Block 600# Class		R = Extended Female NPT	R = Extended Female NPT	J = V-TEF™ / V-TEF™ / FKM - VTFE Cavity Filler
	25 = 254 SMO 6 Moly Body & End Connections	N = Double Block 900# Class	S = Female Comp. Thread *	S = Female Comp. Thread *	N = PEEK / PEEK / Kalrez	
	F9 = A182 Gr. F9 Carbon Steel Body & End Conn.	O = Double Block 1500# Class	J = Ext. Female Socket Weld	J = Ext. Female Socket Weld	Y = C-TEF™ / Graphite / (FFKM 1-1/2" - 2")	
	S- = Inconel 625	P = Double Block 2500# Class	T = Ext. Male Socket Weld	T = Ext. Male Socket Weld	Z = V-TEF™ / V-TEF™ / EPR	
			U = Female Socket Weld	U = Female Socket Weld	O = S-TEF® / S-TEF®/ EPR	
			W = RTJ Flange	W = RTJ Flange	Valves seal HP or LP. Consult PBM for other configurations.	
			X = Sanitary Clamp	X = Sanitary Clamp		
IM Valve = Instrument Valve W/41, 50, or 75 Dia Port IB Valve = Instrument Valve - Bolted W/ 1/2" Port and Larger All others are 150# or 300# Double Block only (K & L)						
POS 10	POS 11	POS 12	POS 13&14		POS 15	
1ST END CONNECTION SIZE (HP / UPSTREAM)	2ND END CONNECTION SIZE (LP / DOWNSTREAM)	BLEED / GAUGE PORT OPTIONS	OPERATOR OPTIONS		BLEED / GAUGE VALVE OPTIONS	
A = 1/4 inch, 41" Dia. Port	A = 1/4 inch, 41" Dia. Port	- = No Bleed or Gauge Ports (2-Way Only - STD)	- - = Manual Lever Handle		- = No Bleed or Gauge Valve (2-Way Only - STD)	
B = 3/8 inch, 41" Dia. Port	B = 3/8 inch, 41" Dia. Port	A = (1) 1/4" FNPT Bleed Port 90° from Stem (Double Block Only - STD)	00 = Manual Locking Oval Hand Wheel RH Operation (CW)		A = 1/4" FNPT Ball Valve	
C = 1/2 inch, 41" Dia. Port	C = 1/2 inch, 41" Dia. Port	B = (1) 1/4" FNPT Bleed Ports 180° from Stem (Double Block Only)	01 = Manual Locking Oval Hand Wheel LH Operation (CCW)		B = 3/8" FNPT Ball Valve	
1 = 1/2 inch, 50" Dia. Port	1 = 1/2 inch, 50" Dia. Port	C = (1) 3/8" FNPT Bleed Port 90° from Stem (Double Block Only)	02 = W/O Handle, Stem Prep for Automation		C = 1/2" FNPT Ball Valve	
D = 3/4 inch, 41" Dia. Port	D = 3/4 inch, 41" Dia. Port	D = (1) 3/8" FNPT Bleed Ports 180° from Stem (Double Block Only)	03 = With Handle, Stem Prep for Automation		D = 3/4" FNPT Ball Valve	
E = 3/4 inch, 75" Dia. Port	E = 3/4 inch, 75" Dia. Port	E = (1) 1/2" FNPT Bleed Port 90° from Stem (Double Block Only)	04 = Manual Locking Lever Handle RH Operation (CW) - STD		E = 1" FNPT Ball Valve	
2 = 1 inch, 41" Dia. Port	2 = 1 inch, 41" Dia. Port	F = (1) 1/2" FNPT Bleed Ports 180° from Stem (Double Block Only)	05 = Manual Oval Hand Wheel		F = 1/4" FNPT Needle Valve	
3 = 1 inch, 75" Dia. Port	3 = 1 inch, 75" Dia. Port	J = (1) 1/4" Socket Weld Bleed Port 90° from Stem (Double Block Only)	06 = Manual Locking Lever Handle LH Operation (CCW)		G = 3/8" FNPT Needle Valve	
4 = 1 inch, 1" Dia. Port	4 = 1 inch, 1" Dia. Port	K = (1) 1/4" Socket Weld Bleed Port 180° from Stem (Double Block Only)	08 = Manual Gear Operator (Recommended for Valve > 1.5 inch		H = 1/2" FNPT Needle Valve	
G = 1-1/2 inch, Full Port	G = 1-1/2 inch, Full Port	L = (1) 3/8" Socket Weld Bleed Port 90° from Stem (Double Block Only)	20 = 80 PSIG Double Acting Actuator		J = 3/4" FNPT Needle Valve	
H = 2 inch, Full Port	H = 2 inch, Full Port	M = (1) 3/8" Socket Weld Bleed Port 180° from Stem (Double Block Only)	27 = 60 PSIG Double Acting Actuator		K = 1" FNPT Needle Valve	
J = 2-1/2 inch, Full Port	J = 2-1/2 inch, Full Port	N = (1) 1/2" Socket Weld Bleed Port 90° from Stem (Double Block Only)	34 = 80 PSIG Spring Return Actuator			
K = 3 inch, Full Port	K = 3 inch, Full Port	P = (1) 1/2" Socket Weld Bleed Port 180° from Stem (Double Block Only)	41 = 60 PSIG Spring Return Actuator			
L = 4 inch, Full Port	L = 4 inch, Full Port	Note: Large sizes available through 10" FP - 12" RP				
M = 6 inch, Full Port	M = 6 inch, Full Port	Position 10 - J through M available in Class 150 and 300 only				

Flush Rings/Bleed Rings with Integral Valve

Flush rings and Bleed rings to customer material and pressure class specifications designed to fit between standard flanges using conventional flange gaskets. Integral ball valve allows venting, purging, sampling and instrument isolation.

Sizes

Face-to-face is 2" standard. Consult factory for other widths.

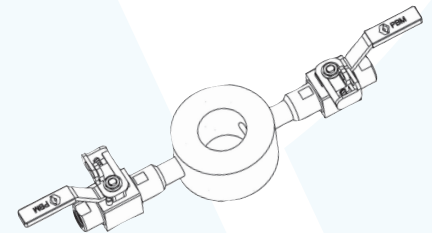


Materials

- Stainless Steel
- Duplex
- Hastelloy®
- Others Available

Features

Integral code-welded valve for flushing, purging and instrument isolation



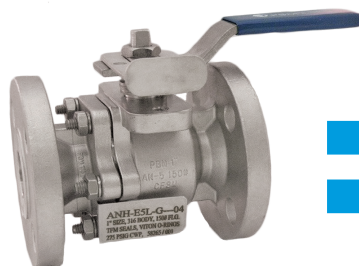
Transmitter Isolation Valves

PBM Transmitter Isolation Valves (TIV) are valves used to isolate media in a tank from a pressure/level transmitter. The valve when in the open position creates a communication between the media in the tank and the transmitter. The valve is only closed when the transmitter needs to be isolated for service.

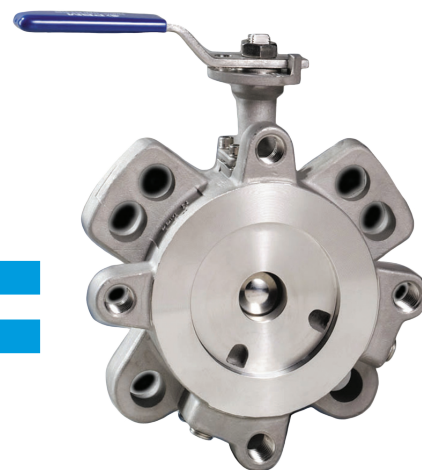
TIV valves feature minimal dead space and positive shut-off. They are available in CL150, CL300, and CL600 RF Flange. Calibration port, CIP port, and locking handle are standard. Cast body, universal design, in stock.



Flush Ring

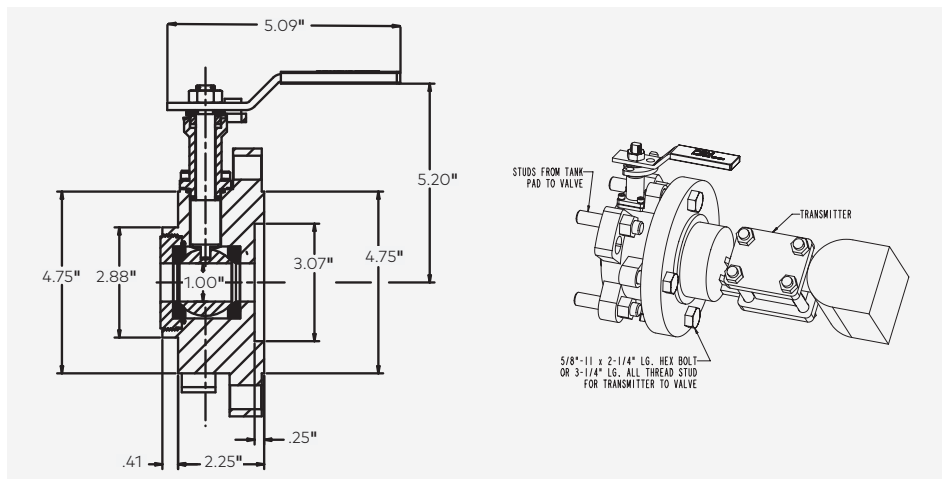


ANSI Valve

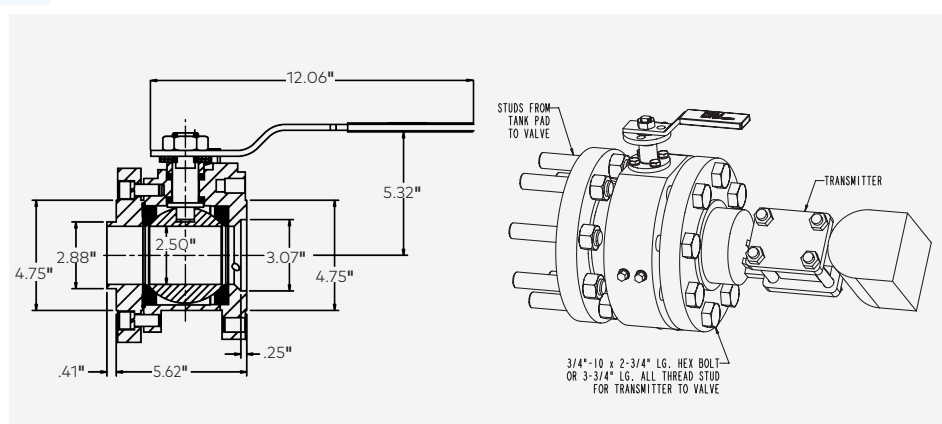


TIV

1" Port x 3" Flanged



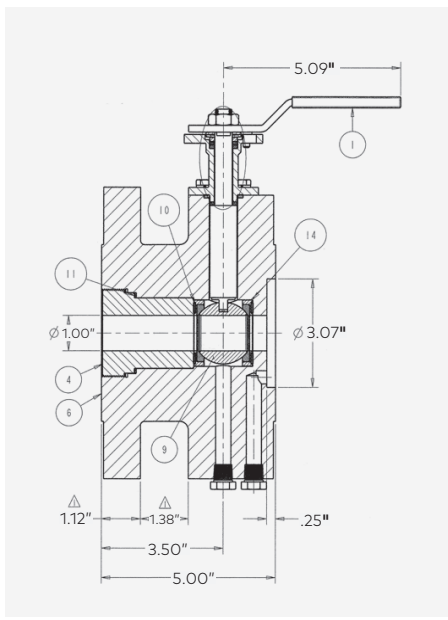
2-1/2" Port x 3" Flanged



Full or True Bore® Port ANSI Style
Transmitter Isolation Valves
provide value to the customer.

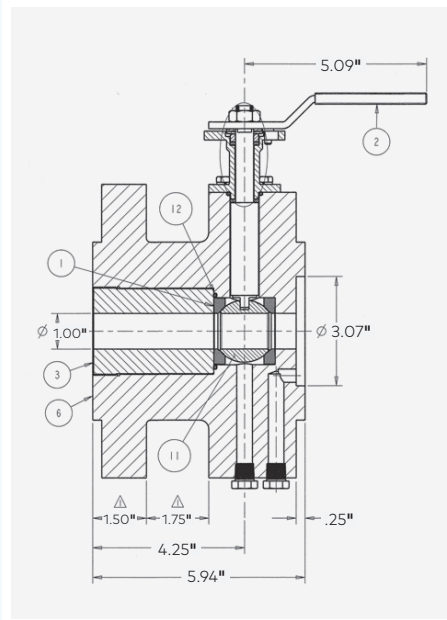
Transmitter Isolation Valves: CL300 / CL600

ANSI CL300

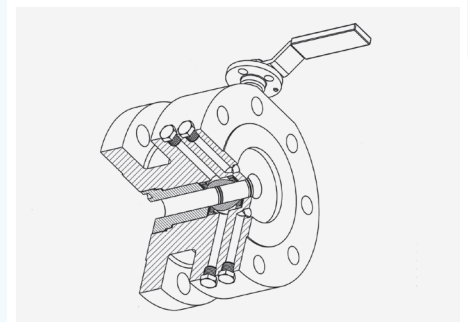


1" x 3" Shown

ANSI CL600

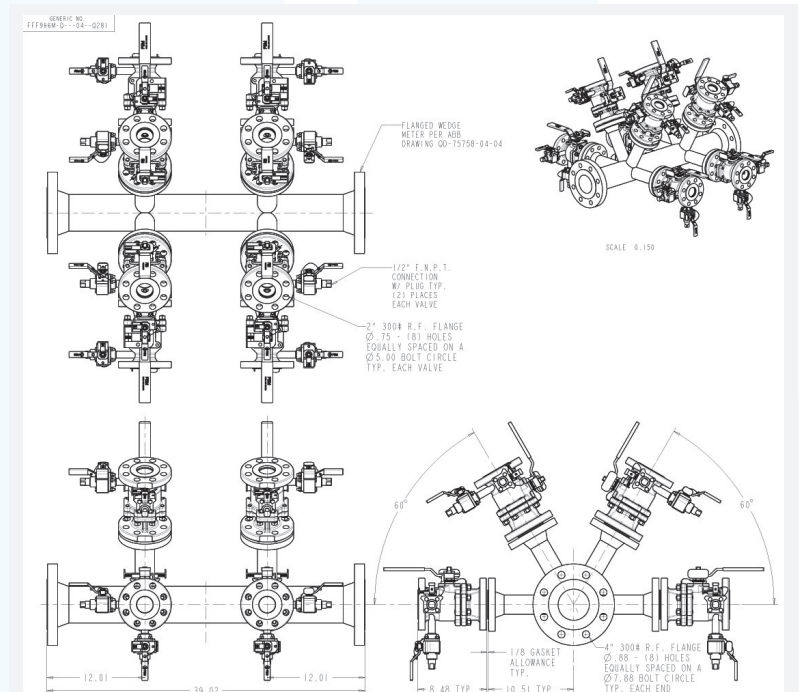
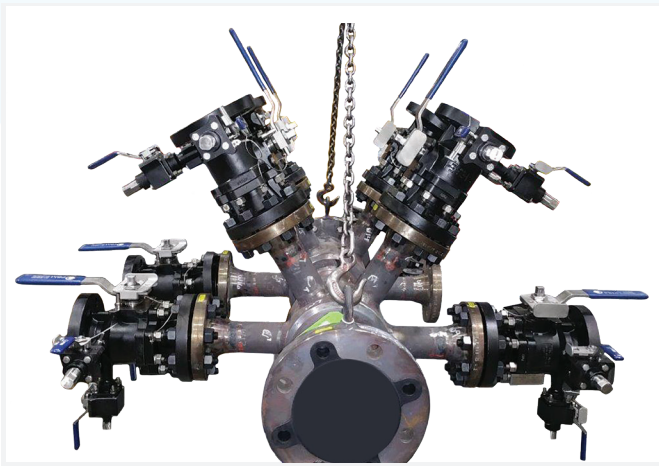


1" x 3" Shown



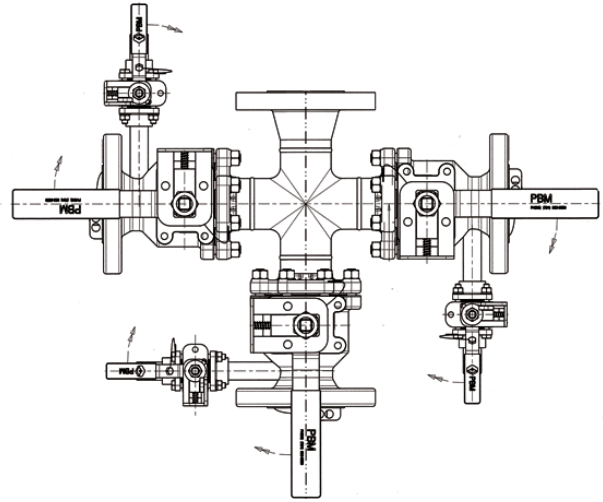
- Pressure classes: 150-600
- Sizes: 1 x 2, 1 x 3, and 2.5 x 3 Inch (ball port size x flange size)
- Any material type
- Temps: <800°F (427°C)
- Purge/Cal port sizes: 1/4 or 1/2 inch FNPT (2 or 4 ports available)
- Custom configurations available

Example case: 2" PBM TIV on 4 inch ABB Wedge Meter Heavy Crude Line in a Coker Unit



Fabflex® Instrumentation Valve Manifolds

IMI PBM's Valve Manifolds are designed to handle upper temperatures that range from 300°F to 600°F (149°C to 316°C) with working pressures from 150 to 400 PSIG (10 to 28 BARG). A refinery uses these manifolds for measuring as well as level indication.

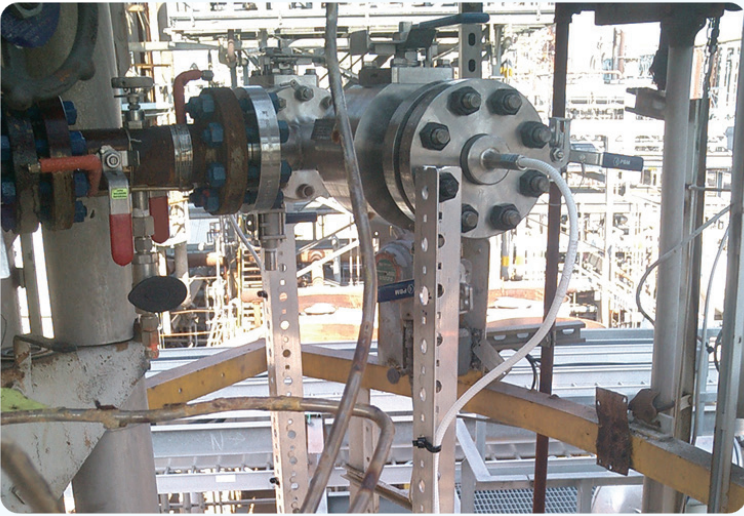


Fabflex® fabricated manifold solution:

- Custom PBM Fabflex® manifold design for multiple instrumentation mounts
- Custom manifold design to optimize space utilization.
- Factory fabricated in a controlled manufacturing environment to ensure high quality welding fabrication process.
- Individual valves fabricated "into" the manifold eliminating many emission leak paths to improve the overall EPA rating of the system.
- Field installation simplified into bolting up one flange and installing the transmitters, transducers or other instrumentation.



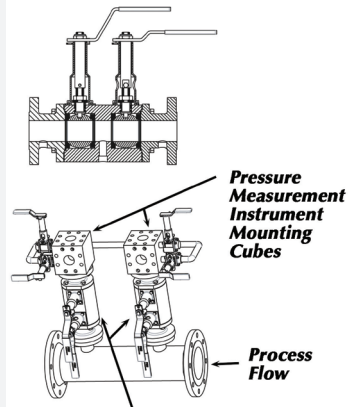
Unique Valve Applications



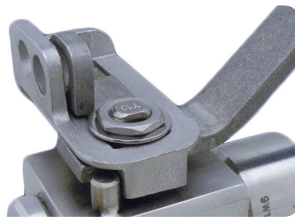
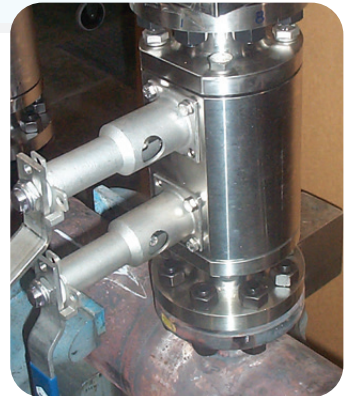
ANSI Style Double Block & Bleed Valve



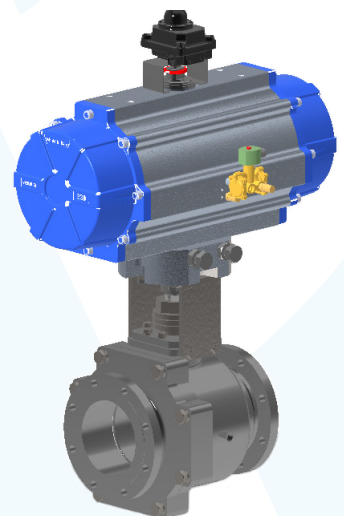
Fabflex Manifold® Assembly
Various configurations available



Double Block & Bleed Valves



Lockable Manual Handles
Standard and automation available

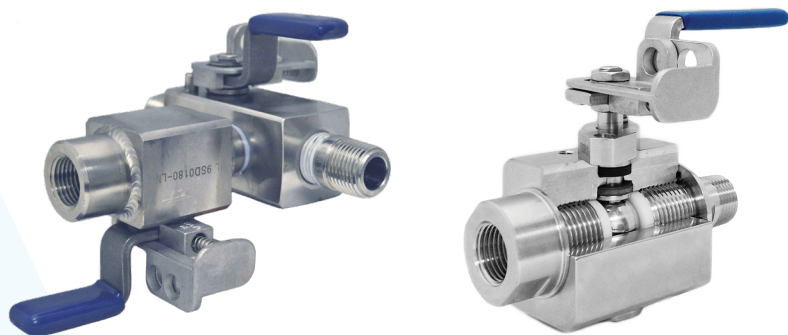


ANSI Trunnion (TN Series) Valve



Sampling Valve
Available in single and double block configurations

Technical Information

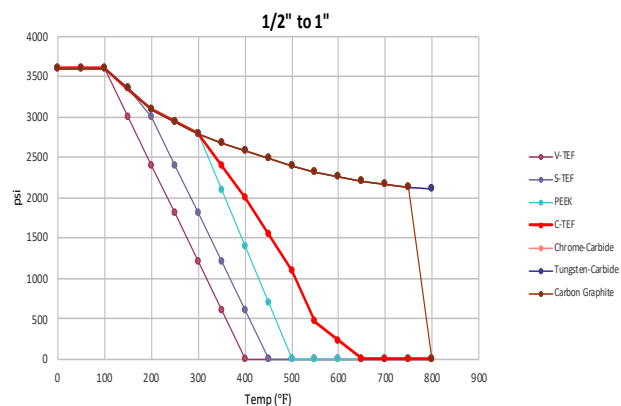


Instrument Valve Pressure/Temperature and Torque Charts:

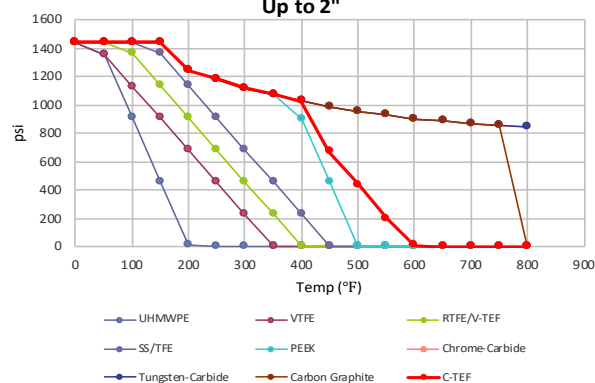
IMI PBM Pressure Class

Rating Size	150	300	600	1500	2500
1/4"	•	•	•	•	•
1/2"	•	•	•	•	•
3/4"	•	•	•	•	
1"	•	•	•	•	
1-1/2"	•	•	•	•	
2"	•	•	•	•	
3"	•	•			
4"	•	•			
6"	•	•			
8"	•	•			
12"	•	•			

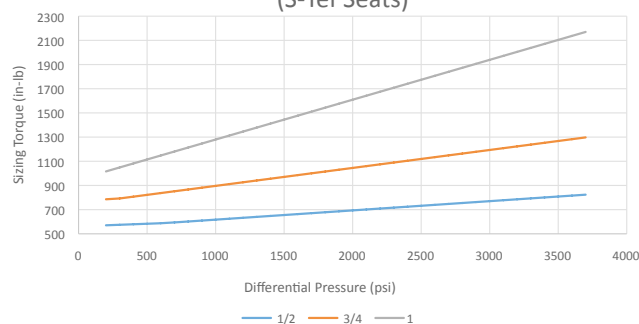
IB/IM Valve: Seat Pressure vs Temperature Chart Class 1500



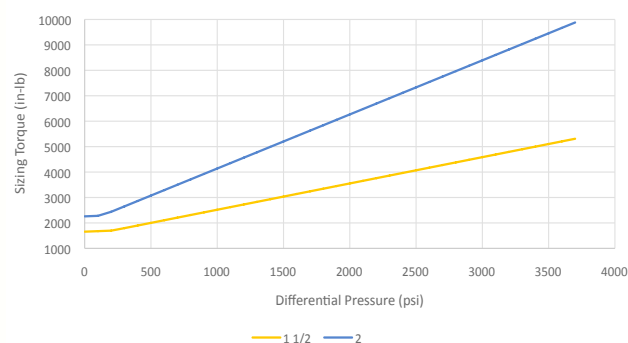
IB 600# Valve: Seat Pressure vs Temperature Up to 2"



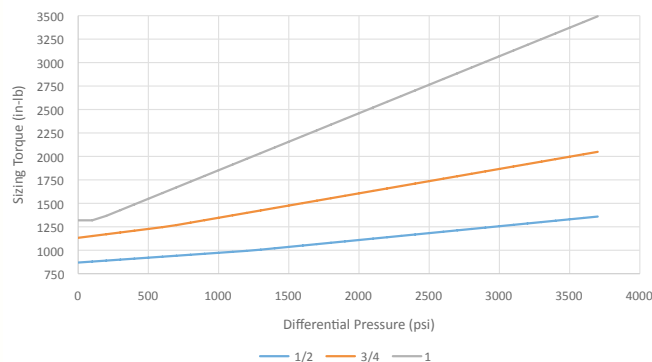
IB Sizing Torque (S-Tef Seats)



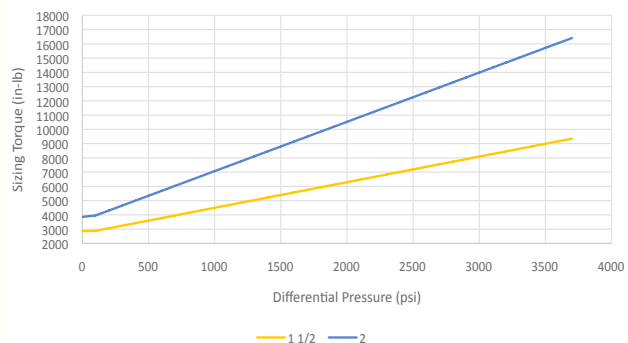
IB Sizing Torque (S-Tef Seats)



IB Sizing Torque (Metal Seats)



IB Sizing Torque (Metal Seats)





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